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ABSTRACT

Schools have been encouraged by recent legislation to develop vocational programs for all students interested in any phase of agriculture. In 1968, a total of 524,775 high school students were enrolled; 26 percent were engaged in off-farm agricultural education programs. The 12,000 teachers of these students also conducted programs for approximately 350,000 young and adult farmers. Vocational education programs in agriculture are being updated through increased use of multiple-teacher departments, development of area vocational centers, curriculum revision, work experience programs, addition of prevocational programs, and development of programs for youth with special needs. Post-high school technical and continuing education is becoming more imperative in order to advance and retain jobs. Persons who have studied vocational agriculture in high school achieve as well or slightly better in college than student who have not. In a 40-year study, it was indicated that slightly more than 40 percent of the high school graduates were employed in farming and related occupations. A summary of the annual report of the national advisory council on vocational education for 1969, projections for the future, and guidelines forwarded by various groups relating to vocational education in agriculture conclude the paper. (DM)

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ROLE OF HIGH SCHOOL VOCATIONAL AGRICULTURE IN OCCUPATIONAL DECISION MAKING

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Presented at a Meeting of North Central Regional Research Committee 86 (Hatch 332), "The Anatomy of Decision Making As It Relates to Occupational and Educational Choices of Rural Youth."
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ROLE OF HIGH SCHOOL VOCATIONAL AGRICULTURE IN OCCUPATIONAL DECISION MAKING

Programs of vocational agriculture have been an effective part of the public schools throughout the United States for more than 50 years. These programs were initiated as a result of the Smith-Hughes Act of 1917 and subsequent acts which provided federal participation and financial assistance to states. The primary purpose in the beginning and for many years was limited to the development of programs for "persons over 14 years who have entered upon or are preparing to enter upon the work of the farm or of the farm home." This direction resulted in programs that were typified as being a part of rural schools for farm boys in high school.

Due to many social and technological changes which affected greatly the opportunities and training needs for persons engaged or hoping to be engaged in agriculture, the Vocational Education Act of 1963 amended the previous legislation to provide that "any amounts allotted . . . for agriculture may be used for vocational education in any occupation involving knowledge and skills in agricultural subjects whether or not such occupation involves work of the farm or of the farm home . . ."

Purposes

The purposes of vocational and technical education in agriculture are derived from the broad setting of our democratic society, the public schools, agricultural technology, and vocational and technical education. These purposes are three-fold: First to contribute to the educational objectives of American public education; second, to contribute to the controlling purpose of vocational education which is to fit persons for gainful employment; and third,

specifically to provide training and retraining for youths and adults which is realistic in light of actual or anticipated opportunities for employment.[1] The major program objectives are as follows:

1. To develop agricultural competencies needed by individuals engaged in or preparing to engage in production agriculture.

2. To develop agricultural competencies needed by individuals engaged in or preparing to engage in agricultural occupations other than production agriculture.

3. To develop an understanding of and appreciation for career opportunities in agriculture and the preparation needed to enter and progress in agricultural occupations.

4. To develop the ability to secure satisfactory placement and to advance in an agricultural occupation through a program of continuing education.

5. To develop those abilities in human relations which are essential in agriculture occupations.

6. To develop the abilities needed to exercise and follow effective leadership in fulfilling occupational, social, and civic responsibilities.[2]

It is the philosophy of vocational agriculture that programs should be continued and evolved that provide education needed by persons of all ages in all communities to prepare them for gainful employment in agriculture. Vocational education in agriculture should open the door to equal educational opportunity for all without regard to academic ability or socio-economic background.

The Act of 1963 encouraged schools to develop programs for all students interested in any phase of agriculture. This included instruction for girls

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[1]"Objectives for Vocational and Technical Education in Agriculture," U. S. Department of Health, Education, and Welfare, OE-81011 Bulletin, 1966, No. 4.

[2]"Objectives for Vocational and Technical Education in Agriculture," Ibid.

and boys in urban centers as well as in rural communities. The newer programs include occupational education for those interested in ornamental horticulture, mechanics, supplies and service, products and processing, forestry, rural resource development and recreation in addition to agricultural production.

Extent of Program

Programs of vocational agriculture have been developed in all states, primarily in rural schools. Notable exceptions have been programs in Los Angeles, New York City, Boston, and more recently Cleveland. The number of teachers involved and the number of students served have increased throughout the years. In 1968 a total of 524,775 high school students were enrolled with 26 per cent being engaged in off-farm agricultural education programs. These students were taught by approximately 12,000 teachers. Many of these teachers likewise conducted programs for approximately 350,000 young and adult farmers.

States have varied in the extent to which new programs have been evolved and increased numbers of students served. In Ohio, for example, there are approximately 16,000 high school students enrolled during the current year which is at least 2,500 more than five years ago. The change is noted by the number of teachers involved in programs designed for students interested in agriculture other than farming--48 teach horticulture, 69 agri-business, 18 specialized agricultural mechanics, 5 conservation, and 43 disadvantaged youth. These programs have been facilitated through an increased number of multiple-teacher departments. Currently 202 teachers are in multiple-teacher programs varying in number from two to four. In the multiple-teacher departments, a variety of programs can be developed with teachers more specialized in their instruction.

An increase in multiple-teacher departments is taking place throughout the United States. Herring[3] found that in 1968 there were 1,383 departments (one out of each six) having more than one teacher. This is an increase of 45 per cent since 1964. It was projected that a similar increase will continue in the next five years.

The development of area vocational centers has been another means of providing new programs. Most schools, where vocational agriculture has been offered, do not have enough students or equipment to develop adequate programs. In Ohio there are fourteen area centers in operation, sixteen have been approved, and others are being planned. In the Penta County Center, for example, 19 school districts in five counties are now serving junior and senior high school boys and girls to supplement the instruction available in the local school. This facility and the number of students desiring instruction make possible the offering of at least 30 different programs in vocational education. In agriculture, programs are provided in horticulture, agricultural equipment, and farm management. Students are transported from their home school for the entire day with six periods in vocational education. During the last nine weeks of the senior year they are co-oped in a local business. Students graduate from their local high school. Agriculture enrollment in these local schools has increased 30 per cent.

At a National Seminar on Agricultural Occupations Program Development in Area Vocational Schools conducted by Ohio State University in September 1968, it was reported that 24 of the 36 states represented at the seminar had area

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[3]Donald R. Herring. "Guidelines for Organizing and Planning a Multiple-Teacher Department of Vocational Agriculture," Ph.D. Dissertation. Columbus: The Ohio State University, 1969.

center programs for high school students in operation or planned. In 1968-69, two-thirds of the 380 area centers with vocational-technical programs for high school students in the 24 states offered agricultural instruction. An additional 370 area centers had been approved; 60 per cent of these centers included programs in agriculture.

Curriculum

Most teachers of vocational agriculture believe that curriculums should be of a flexible nature and provide students preparation for entry level occupations as well as the ability to p rsue additional educational options. No program is terminal. For the most part the development of the curriculum is a four-year elective program directed by the local teachers of agriculture with the assistance of local advisory committees. In most schools there is but one course available for each of the grades in high school. In addition to vocational agriculture, the typical student will complete at least three years of English, two to three years of science, two years of mathematics, and some social science.

In all cases agricultural curriculums should be closely integrated with general education. Likewise, they should be coordinated with other areas of vocational education. Possibilities should be available for the student to take some work in such areas as distributive education, business education, or trades and industries if that is a more appropriate option in terms of his educational interests and opportunities.

Agan[4] and others in Kansas conducted a pilot program of vocational education representing all of the fields. They found that in Paola, Kansas, a

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[4]R. J. Agan. "A Coordinated and Integrated Program of Occupational Information, Selection and Preparation in a Secondary School," Staff study. Manhattan, Kansas: Department of Vocational Education, Kansas State University, 1968.

complete program of vocational education could be conducted to an advantage where one vocational teacher assumed a leadership role as coordinator and enlisted the assistance of his fellow teachers as a part of the team of vocational teachers. Students were able to explore occupations and themselves as a part of the world of work during their junior year and then select one area of work as a part-time employee during the senior year.

Occupational commonalities were identified by Dillon and Horner.[5] Their research supports the planning of broad vocational courses that stress basic concepts in which persons in many different job titles but with common educational needs may be prepared together.

The time allotted for the vocational agriculture program is usually five one-hour periods or seven to eight 45-minute periods per week. In the newer, more specialized programs, particularly those in area vocational centers, a student may spend as much as six periods per day which includes instruction in the classroom, laboratory, shop and/or occupational experience in an agribusiness.

In the ninth and tenth grades, much of the classroom and laboratory instruction centers around plant and animal science with some agricultural mechanics. In practically all situations career exploration is likewise included as a part of the instructional program. Burchinal[6] and Ginzberg[7]

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[5]Roy D. Dillon and James T. Horner. "Occupational Commonalities--A Base for Course Construction," Staff study. Lincoln, Nebraska: Department of Agricultural Education, University of Nebraska, 1968.

[6]Lee G. Burchinal. "Career Choices of Rural Youth in a Changing Society," North Central Publication No. 142, Agricultural Experiment Station, University of Minnesota, 1962. pp. 6-9.

[7]Eli Ginzberg. "Toward a Theory of Occupational Choice," Personnel and Guidance Journal, Vol. 30, 1952. pp. 491-494.

suggest that students make a tentative choice of occupations at this age (14-18). The vocational agriculture curriculum contributes to four phases of this process: development of interest, identification of agricultural career opportunities, development of qualifications for entrance and success in agricultural careers, and evaluation of students' values, goals, capacities, and interest with tentative choices.

Teachers and others engaged in vocational education in agriculture believe that much emphasis should be given to vocational and educational guidance including the counseling of students concerning technical schools, four-year college programs, young farmers or other appropriate post-high school programs as well as placing them in employment opportunities and providing follow-up service. They operate on the basis that occupational decision making is limited by the number of job opportunities and the individual's knowledge and education related to these opportunities as has been identified by many researchers, including Zytowski,[8] Burchinal,[9] and Haller.[10]

The eleventh and twelfth years of vocational agriculture are more specifically related to preparing students for skilled positions in one or more of the many fields in agriculture. In order to provide maximum opportunities and mobility within agricultural job classifications, the courses of study are designed to prepare students for a cluster of jobs within a given area but specific enough to provide them with sufficient skills to qualify for entrance into specific occupations.

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[8]D. G. Zytowski. "A Maximizing Model of Occupational Decision Making," Personnel and Guidance Journal, Vol. 47, No. 8, 1969. p. 781.

[9]Burchinal, Op. Cit.

[10]Archibold Haller. "Rural Youth Need Help in Choosing Occupations," Circular 235. East Lansing, Michigan: Agricultural Experiment Station, Michigan State University, 1963.

The curriculum is developed and teaching conducted on the basis that theory and practice should be integrated. Students should understand principles or why as well as what and how. Therefore, the teachers need to be quite knowledgeable of the most recent research and the best current practices to be followed as well as to have a good understanding of the current situation existing in the community and on the specific farms or businesses in which the students are involved. Much use is made of community resources including personnel and physical resources such as farms, greenhouses, and other agricultural businesses. A good library of up-to-date graded instructional materials is necessary.

Increasing emphasis is being given to the development of appropriate curriculum materials. Many states have a director of such a program who works closely with other personnel in agricultural agencies, businesses, and in other programs of vocational education. This program of instructional materials includes securing and adapting that which is available and in many cases writing new materials that are based upon interests and needs of students.

Supervised Occupational Experience

Appropriate supervised occupational experience programs should be provided for all students enrolled in vocational agriculture. Such programs need to be related to the interests and needs of the student and the course of study pursued. The most typical kind of occupational experience has consisted of production projects involving the growing of plants or animals at home or on a neighboring farm. Placement for on-the-job training in an agricultural industry is becoming more extensive, particularly in the new curriculums such as agricultural business. Most of the on-the-job training occurs in the eleventh and twelfth grades. The experience programs, which should be year-

round in scope and progressive from the simple to the more difficult so far as the student's responsibility is concerned, enables the students to enter the realistic trial or crystalization stages of occupational decision making before the age of eighteen.

Production projects and on-the-job training programs provide opportunities for students to develop decision making skills and to determine their proficiency in an agricultural occupation. Through the guidance and supervision of the vocational agriculture teachers, students learn first the real nature of the agricultural occupation, their likes or dislikes for the occupation and their strengths or weaknesses for progressing in this area of experience. If a student dislikes a given project or job, he may transfer to another. This would be encouraged during the tenth and eleventh years, although the student is not limited to a change in the senior year. Occupational experiences help the student to first decide on an agricultural occupation; second, to discover areas where he needs further preparation in school; and third, to provide experience, skill training and capital which is useful and essential for entering an agricultural occupation.

> Programs of supervised experience in agricultural education have been justified, philosophically and educationally, on the grounds that supervised practice motivates the learner, allows classroom instruction to be taught in a meaningful context, provides an opportunity for the application of what is taught, enables a student to learn by doing, and contributes to the development of general skills and attitudes toward work which are needed for employment in any occupation. Strangely enough, research growing out of these theoretical foundations and research designed to test these hypotheses concerning the values of supervised experience in agricultural education have been meager.[11]

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[11] J. Robert Warmbrod and Lloyd J. Phipps. Review and Synthesis of Research in Agricultural Education. Columbus: The Center for Vocational and Technical Education, 1966. 53 pp.

Edlefsen and Crowe[12] in 1960 found that actual work experience in the field is the paramount reason for the student's interest in his preferred occupations. In 1963, Judge[13] investigated the relationship between work experience of high school students and their occupational and educational plans and aspirations. He found that increased amounts of work experience including experience with projects owned by the pupil were related to a choice of agricultural occupations in preference to non-agricultural occupations, to the choice of farming in preference to non-farm agricultural occupations, and to higher levels of occupational aspiration.

Other factors which influence occupational choice as reported by Zytowski and Kaldar[14] are: prestige of an occupation, the reaction of peers to an individual's occupational choice and potential monetary returns for an occupation.

Bentley and Scott[15] (1961) identified significant differences between two groups of teachers concerning the activities which were emphasized in planning and conducting supervised agricultural experience programs. The teachers who taught in schools where enrollees completed a relatively high number of production projects gave special attention to farming program requirements expected

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[12]John B. Edlefsen and M. J. Crowe. "Teen-Agers' Occupational Aspirations," Washington Ag. Experiment Station Bulletin 618, July 1960.

[13]Homer V. Judge. "Work Experiences of Michigan High School Students of Vocational Agriculture and Their Relation to Occupational and Educational Plans," Doctor's Thesis. Michigan State University, 1963.

[14]D. G. Zytowski and D. R. Kaldar. "A Maximizing Model of Occupational Decision Making," Personnel and Guidance Journal, Vol. 47, No. 8, April 1969. p. 781.

[15]Bentley and Scott. "Teacher Activities and the Completion of Productive Enterprise Projects," The Agricultural Education Magazine, September 1961.

of enrollees, worked closely with their parents in planning and conducting the program, related class teaching to their supervised farming program, and made use of the FFA awards program as a means of motivating enrollees to complete farming programs. It is believed that such an emphasis with respect to other occupational experience programs would produce similar results.

In conducting occupational experience programs for off-farm agricultural occupations, it is very important to select appropriate experience centers. Among other things, this includes having an employer who is willing to cooperate and interested in the trainee's welfare. He must provide adequate on-job supervision of a variety of experiences so that the needed competencies will be developed. Employment schedules and payments should be mutually satisfactory. Attention must be given to legal requirements that have reference to insurance, workmen's compensation, antidiscrimination laws, fair labor standards, social security, income tax, and labor unions.

Cushman[16] and others engaged in an extensive project concerning the development and improvement of directed work experience programs in expanding vocational education offerings in agriculture at the high school level. They developed and evaluated guidelines and procedures which have been published as Cornell Miscellaneous Bulletin 91 of the New York State College of Agriculture, June 1968, entitled "The Teacher-Coordinator's Manual for Directed Work Experience Programs in Agriculture."

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[16]Harold R. Cushman, Charles W. Hill, and John K. Miller. The Development and Improvement of Directed Work Experience Programs in Expanded Vocational Education Offerings in Agriculture at the Secondary School Level. U. S. Department of Health, Education and Welfare, Final Report, Project No. 50161, June 1968.

In their trial and evaluation of the guidelines, they found evidence to support the effectiveness of programs organized according to the guidelines and procedures. They indicated that a program so outlined is capable of eliciting widely the interest, support, and cooperation of the agricultural business community, of students of vocational agriculture, and of vocational agriculture teachers. They found that directed work experience had a major impact upon one very relevant aspect of the process of vocational preparation. It resulted in the more extensive direct exposure of vocational students to the real world of adult employment than is typical of conventional vocational courses. First-hand experience provides a more fertile basis for learning than vicarious sources of knowledge and experience. Directed work experience programs are justified by the magnitude of student response and the facilitating of the attainment of the vocational program's educational goals. Students of tryout center programs enter occupations related to their vocational course of study with greater frequency than students of more conventional programs. They also more frequently pursue advanced study in areas related to their high school preparation.

As hypothesized, no conclusive evidence supporting the position of an arbitrary amount of work experience emerged from the observed results in this study. On the contrary, achievement in technical knowledge and competence, job satisfaction, and employment follow-up criteria for two groups of directed work experience participants did not differ as a function of group differences in the number of hours worked. A minimum requirement, therefore, does not appear necessary in addition to intrinsic encouragement and motivational impact that characterizes well organized programs of directed work experience.

Future Farmers of America

The Future Farmers of America, which was initiated in 1928, is an integral part of the instructional program. Through its program of activities, students are motivated, they develop more interest in agricultural occupations, and develop leadership abilities.

> Former FFA members are able to utilize their training and experiences in many ways. The abilities to organize and present ideas, to conduct meetings, and to work with others are needed by all organizations. One former FFA member in a large southern state was elected to represent his district in the State Legislature and became Speaker of the House of Representatives at the age of twenty-six. Ten other former FFA members also served with him in the legislature. In other states former members are serving as President of the State Farm Bureau, Chairman of the Board of Education, President of the local cooperative, and in many other positions of leadership and responsibility. A state governor speaking at the National FFA Convention in Kansas City remarked that he received his first public speaking training and experience in the FFA.[17]

In addition to leadership ability, a communal feeling is developed in a four-year vocational agriculture-FFA program. This ability and feeling provide support to a student in the selection and choice of an agricultural career.

One of the most extensive studies concerning the FFA was completed by Kantner,[18] "Adapting the FFA to a Changing Program of Vocational Agriculture." This study involved an evaluation on the part of state supervisors, executive secretaries of the FFA, teacher educators, presidents of state vocational agricultural teachers' associations, and past national officers. They reported rather consistently that the FFA should broaden its objectives and program to

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[17]Ralph E. Bender, Raymond Clark, and Robert E. Taylor. The FFA and You--Your Guide to Learning. Danville, Illinois: Interstate Printers and Publishers, 1962. pp. 3-4.

[18]Earl F. Kantner. "Adapting the FFA to a Changing Program of Vocational Agriculture," Ph.D. Dissertation. Columbus: The Ohio State University, 1966.

provide activities and awards for urban and rural girls as well as boys who are in a program of off-farm agricultural occupations in addition to production agriculture.

The FFA has been a tremendous motivating force that has capitalized on the natural inclination of people to work for goals that they desire to attain. The National FFA Foundation, comprised primarily of business leaders, has collected and distributed more than $200,000 per year in incentive awards. It may be of interest to know that in the 1969 convention, a Star American Agri-Business Man will be identified in addition to the Star American Farmer, the top award made each year.

Post-High School Education Programs

The rapid advances in technology have necessitated post-high school technical and continuing education to advance and retain jobs. This additional training also broadens the student's employment opportunities. One of the fastest growing developments in vocational agriculture is the establishment of two-year technical programs. During the 1967-68 school year, 288 post-high school institutions in the United States offered 617 programs of instruction in agriculture. In the eight identified instructional areas there were 148 programs in agricultural production, 85 in agricultural supplies, 107 in agricultural mechanics, 29 in agricultural products, 93 in ornamental horticulture, 23 in agricultural resources, 63 in forestry, and 69 programs in other areas of agriculture. Seventy-six per cent of the programs at the post-high school level were preparing students for off-farm agricultural occupations. In charge of the programs were 294 post-high school technical institute or community college teachers.

Becker[19] found that the typical student in technical agriculture programs in Ohio was 19 years of age when he enrolled; he had previous farming experience; and he lived on a farm within 50 miles of the technical institute attended. His father is employed in farming or in another agricultural occupation. He was a high school graduate and ranked in the 47 percentile of his high school class. He was encouraged to enroll in technical programs by his parents, vocational agriculture teacher, and technical school representatives. An increase in earning capacity, more desirable employment, and improvement of opportunities for advancement prompted enrollment in the technical program. Three of every four students were employed while enrolled in the technical program. Neither commuting or employment, however, adversely affected their grade point average.

Approximately 60 per cent of the graduates were employed in an occupation for which they were trained. Another 7 per cent were in other agricultural occupations primarily farming; 7 per cent were in college; 18 per cent were in military service; and 9 per cent in non-agricultural occupations. One of each four enrollees failed to complete the program. The technicians were well pleased with their employment opportunities. Ninety-eight per cent of the employers indicated that they would hire other graduates from the technical agriculture programs.

Undoubtedly, the development in post-high school instruction will have implications on the kind and extent of programs in agriculture to be offered at the high school level.

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[19]William J. Becker. "Technical Agriculture Programs in Ohio with Emphasis Upon Student and Program Characteristics," Ph.D. Dissertation. Columbus: The Ohio State University, 1968.

College Training

As indicated earlier, programs in vocational agriculture are designed in an open-ended, non-terminal manner so that students may continue their education throughout life. Research has shown consistently and conclusively that persons who have studied vocational agriculture in high school achieve as well or slightly better in college than students who have not studied agriculture in high school.

Tom[20] reviewed 32 studies of this nature between 1929 and 1959. He found that 53.8 per cent of the findings showed that the students who studied agriculture in high school had higher scholastic averages than pupils in the same institution who had not studied agriculture. Approximately 37 per cent of the studies showed that former enrollees in vocational agriculture did as well academically as other pupils while 9.6 per cent showed that the vocational group made poorer grades. A study by Pierce,[21] Ohio State University, found that students who had studied agriculture in high school did as well academically as other students not only in the College of Agriculture but also in the Colleges of Arts and Science, Commerce, Education, and Engineering.

The findings of Cross[22] concerning the scholastic achievement of Colorado vocational agriculture students enrolled at Colorado State were quite similar

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[20]Frederick Tom. "College Success of Former Students of Vocational Agriculture," The Agricultural Education Magazine, Vol. 32, February 1960. pp. 172-176.

[21]Dewey Pierce. "The Relation of Vocational Agriculture Experience to Scholastic Achievement at Ohio State University," Ph.D. Dissertation. Columbus: The Ohio State University, 1960.

[22]Irving C. Cross. "Scholastic Achievement of Colorado Vocational Agriculture Students Enrolled at Colorado State University from 1950 to 1960," Ph.D. Dissertation. Columbus: The Ohio State University, 1967.

to Pierce. Students in vocational agriculture were more persistent in each of five colleges. The vocational agriculture students completed about the same amount of English as other students; however, they completed slightly less mathematics and science in high school.

Placement and Occupational Choice Values

Placement records of vocational agriculture graduates have not been carefully kept. Among the states they have varied a great deal in form and extent. A forty-year study of the U. S. Office of Education, Department of Health, Education and Welfare as reported in 1968, indicated that slightly more than 40 per cent of the high school graduates were employed in farming and related occupations.

Robinson[23] studied 5,722 former high school vocational graduates. He found that 29.6 per cent were farmers and farm managers, 13.3 per cent were engaged in off-farm agricultural occupations, 1.9 per cent were farm laborers, and 55.1 per cent were engaged in non-agricultural occupations. Highly significant relationships existed between the census classification of the graduate's occupation and education of father and mother, semesters of science and semesters of mathematics. Other more limited studies showed placement percentages of from 47 to 67 per cent.

Bender[24] found that approximately 60 per cent of the graduates (other than those in the service) of vocational agriculture in Ohio out of school one to five years were engaged in farming and farm related occupations. Less than 2

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[23]Ted R. Robinson. "Factors Related to the Occupations of Iowa Farmland High School Graduates," Ph.D. Dissertation. Iowa State University, 1964.

[24]Ralph E. Bender. "1968 Occupations of Recent Graduates in Ohio," Department of Agricultural Education, The Ohio State University, September 1968.

per cent of the graduates were unemployed. This was based on a survey of 1,482 students in 93 departments selected at random. Other data in this continuing survey revealed that 33 per cent of graduates out of school one year and 40 per cent out of school five years were engaged in farming--about 50 per cent were on a full-time basis. Three out of each four (76 per cent) of the graduates engaged in farming were doing so on the home farm. Twenty-five per cent of the graduates out of school one year were in college. They were about equally divided between colleges of agriculture and other colleges.

Elliot[25] in 1961 found that 62 per cent of the graduates in Maine were farming, employed in non-farm agricultural occupations, or studying agriculture in college one year following graduation. Martin[26] in 1963 established that 51 per cent of the graduates in Connecticut were in the three categories listed in the previous study.

Noland[27] questionnaired 276 former vocational agriculture students who had graduated from high school in 1963 from 45 randomly selected departments concerning migration patterns. He found that five years after graduation four of every five graduates excluding those in military service were living within 25 miles of their home communities. The major reasons for the first move were for marriage, college or employment. Employment was the single most important influencing factor for change in residence.

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[25]W. H. Elliot. "After Vo-Ag What?" The Agricultural Education Magazine, Vol. 33, May 1961. pp. 259-260.

[26]W. H. Martin. "Abilities and Careers of Connecticut High School Graduates in Vocational Agriculture," The Agricultural Education Magazine, Vol. 35, June 1963. pp. 266-267.

[27]Warren G. Noland. "Migration Patterns of Vocational Agriculture Graduates in Ohio," Ph.D. Dissertation. Columbus: The Ohio State University, 1968.

Studies made at Iowa State University and elsewhere have proved that former vocational agriculture students had higher crop, livestock, and total gross production from their farms and had used more improved production and management practices than high school graduates who had not received equivalent training in vocational agriculture.[28]

Greater emphasis is being given to economics involved in vocational education programs. Warmbrod[29] made an extensive review and synthesis of the research on the economics of vocational education. Among other things, he concluded "cost-benefit and cost-effectiveness studies of public programs of vocational-technical education are just beginning. The findings of the research reported to date are inconclusive. Studies that are well designed indicate, however, that vocational-technical education is a sound investment."

In studies related to the value of vocational agriculture, those persons working in farming and non-farm agricultural occupations valued the instructional program in agriculture more highly than those employed in non-agricultural occupations. A substantial number of former enrollees in vocational agriculture who were working in non-agricultural occupations indicated that they had profited from their experiences in vocational agriculture. Prominent among the values of studying agriculture in high school listed by former enrollees were the acquisition of abilities of leadership and the ability to work harmoniously

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[28]Duane M. Nielsen. "Relationship of High School Vocational Agriculture and Size of Home Farm to the Establishment of Graduates in Farming," Ph.D. Dissertation. Iowa State University, 1958.

[29]J. Robert Warmbrod. Review and Synthesis of Research on the Economics of Vocational Education. Columbus: ERIC Clearinghouse, The Center For Vocational and Technical Education, 1968.

and cooperatively with others in the development of high standards of workmanship.[30,31,32,33]

In Review and Synthesis of Research in Agricultural Education by Warmbrod and Phipps,[34] the summary statements concerning the characteristics of students studying vocational agriculture include the following:

-- The assumption has been made frequently that boys living on farms would have an interest in studying agriculture while boys living in town would have little if any interest in agriculture as an area of study. The findings concerning the residential backgrounds of pupils tend to negate this assumption.

-- When comparisons of levels of intelligence are made between high school boys enrolled in vocational agriculture and high school boys not enrolled in vocational agriculture, the results consistently favor the pupils who are not enrolled in agriculture. Also as the number of years of voca-

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[30]U. L. Eggenberger. "An Analysis of High School Vocational Agriculture from Evaluations of Graduates in West Texas," Doctor's Thesis. Ames: Iowa State University of Science and Technology, 1964. 166 pp.

[31]J. A. Hayles. "Occupational Experiences of High School Graduates Who Completed Four Years of Vocational Agriculture in Louisiana," Doctor's Thesis. Baton Rouge: Louisiana State University, 1963. 165 pp.

[32]N. L. Robinson. "Competencies in Farm Machinery Maintenance Needed by Farmers," Master's Thesis. Ames: Iowa State University of Science and Technology, 1964. 88 pp.

[33]J. R. Williams. "Occupations of Former Students of Vocational Agriculture in Arizona," Report No. 227. Tucson: Agricultural Experiment Station, University of Arizona, 1965. 18 pp.

[34]J. Robert Warmbrod and Lloyd J. Phipps. Review and Synthesis of Research in Agricultural Education. Columbus: The Center for Vocational and Technical Education, The Ohio State University, 1966.

tional agriculture completed by pupils increases, so does the percentage of pupils who are in the lower categories of intelligence.

-- Research has established rather conclusively that enrollees in vocational education in agriculture both aspire to and plan to attend college in lesser proportions than do other male students in the school.

-- Studies of pupils enrolled in agriculture in college are rather consistent in indicating that other than parents, the person most influential regarding their decision to attend college was their teacher of agriculture in high school.

-- Studies reveal that most persons enrolled in vocational agriculture have made at least a tentative choice of a vocation.

-- When the vocational choices of enrollees in agriculture are categorized by occupational area, indications are that one-half or more of the pupils recording an occupational choice prefer an occupation involving knowledge and skill in agriculture.

-- Research indicates that slightly more than one-third of the enrollees in vocational education in agriculture in high school express a desire to farm as their life's work.

-- A definite relationship has been established between the father's occupation and the son's choice of occupation. Pupils whose fathers were full-time farmers show farming as their career more often than pupils whose fathers were part-time farmers or in another occupation.

-- When compared with their contemporaries in other curriculums, enrollees in vocational agriculture aspire and plan to enter occupations of lesser prestige.

-- Generally, economic aspects of an occupation were rated by the enrollees as more important in their choice of an occupation than the non-economic aspects of the occupation.

Programs for Youth with Special Needs

There is a nationally recognized need for vocational training programs for youth with special needs--youth, who because of physical, educational, cultural, or economic handicaps, are unable to successfully pursue vocational training in regular programs. This need was recognized by the President's Panel of Consultants on Vocational Education in 1962, the Vocational Act of 1963, and the Amendments to the Act of 1968. The Congress earmarked special funds for programs serving the disadvantaged and handicapped.

> The children of the socio-economically handicapped have so far not been given the vocational education opportunities they need. The public funds available for vocational education in the past were insufficient to allow the attention required for their specific problems and in too many instances we have not known these young people nor understood their special needs. Our education programs were not planned with them in mind. The result has been that children, families, and generations of the disadvantaged have been unable to benefit from the education offered.
>
> . . . We can no longer overlook the dropouts from our school. . . . We can no longer ignore the rise of juvenile delinquency.
>
> But vocational education cannot solve this problem unaided. All educators must work together in the formulation of programs which will carry the individual from childhood through adulthood.

Also the dropout rate is decreasing slowly (from 44.7 per cent in 1954 to 36.4 per cent in 1962). Increased school enrollments have pushed the total number of dropouts upward (from 1,031,000 in 1954 to 1,105,000 in 1962 to an estimated 1,200,000 in 1965).

> There is no magic formula for the solution of this problem. Nor is it enough to replace rejection with concern. For socio-

economically handicapped youth the only reliable and lasting solution lies in education and training.[35]

A limited number of studies have been made concerning programs in this area in agriculture. Hamilton[36] studied youth with special needs in 133 non-metropolitan Ohio schools. He found that one of every seven ninth-grade student was considered to be disadvantaged. The ratio of boys to girls was approximately three to two. There were wide variations among schools in the percentage of students considered to be disadvantaged--ranging from three to 40 per cent. The greatest numbers of youth with special needs were characterized as being intellectually handicapped, educationally deprived, socially disadvantaged, and economically deprived. Youth with special needs differed from other students in home and family background as evidenced by characteristics such as larger families, lower educational occupational levels of parents, and four times as many broken homes. There were significant differences between the disadvantaged and other students in their abilities and educational experiences as evidenced by lower reading levels, lower intelligence test scores, lower grades, higher rates of absence, and lower occupational aspirations. They did not differ in terms of race, place of origin, whether or not the mother worked outside the home, nor whether the student had physical or health problems affecting his school work.

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[35]Barbara H. Kemp. "The Youth We Haven't Served, A Challenge to Vocational Education." U. S. Department of Health, Education, and Welfare, Office of Education, OE 80038, 1966.

[36]James B. Hamilton. "Youth with Special Needs in Non-Metropolitan Ohio High Schools," Ph.D. Dissertation. Columbus: The Ohio State University, 1967.

Pre-Vocational Programs

At a statewide vocational education conference in Ohio on November 14, 1968, Dr. Glen A. Saltzman of Kent State University was called upon to present a rationale for pre-vocational education. Among other things he referred to the extensive research conducted by Ginzberg[37] and his colleagues and Super[38] in concluding that vocational choice is a process and not an isolated event and the amount of occupational knowledge and occupational experience contribute immeasurably to one's level of vocational maturity. Three propositions were listed by Saltzman based on an examination of the research, literature, and theory.

1. Through pre-vocational education programs, we are really implementing what we know to be true about vocational development, vocational choice theory, and child growth and development.
   -- There are various developmental periods
   -- Choice is a series of related events and not an isolated skill
   -- Choice is affected by occupational knowledge and experience
2. The validity of one's vocational choice will be increased significantly if an organized program of occupational guidance precedes and accompanies this pre-vocational training.
   -- Occupational guidance increases job satisfaction, earning power, and range of occupations entered; it reduces unemployment in both those who drop out or graduate from high school.

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[37] Ginzberg, Axelrad, and Herman. Occupational Choice: An Approach to a General Theory. New York: Columbia University Press, 1951.

[38] Donald E. Super. "A Theory of Vocational Development," American Psychologist, 8:185-190, 1953.

3. Guidelines for pre-vocational programs should not be prepared locally but rather should be designed by persons knowledgeable about vocational choice theory, pre-vocational program research, and programs of vocational education.

In Ohio, North Carolina, and a number of other states, pre-vocational programs at the junior high level and in the middle elementary grades are underway.

Projections and Guidelines for Future Programs

It appears that some of the more common developments to be made in agricultural education include more programs for students with special needs, pre-vocational education, specialized programs for junior and senior high school students, post-high school programs, and more specialized instruction of a continuing nature for young and adult farmers and personnel enrolled in non-farm agricultural occupations. Programs in elementary and high school education should be oriented to a greater extent toward the world of work. As pointed out by Governor Rhodes of Ohio, we must eliminate the "intellectual snobbery" and biases against vocational education.

Numbers to Be Needed and Served

In a tentative draft of "Guidelines for Agricultural Education--The Decade Ahead,"[39] which will be published by the Office of Education of the U. S. Department of Health, Education, and Welfare, it is estimated that the total enrollment in agricultural education by 1975 will be 1,150,000 students (includes post-high school and adult education in addition to high school students). It

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[39]"Guidelines for Agricultural Education--The Decade Ahead," U. S. Department of Health, Education, and Welfare, Office of Education (not yet published.)

is projected that 56 per cent of these students will be preparing for off-farm agricultural occupations.

Between 1963 and 1966 studies were completed in 26 states which identified statewide and area employment needs in non-farm agricultural related business and industrial firms. General findings of these studies indicated that approximately half of the workers employed in non-farm agriculturally oriented businesses need education or training in agriculture; that employers estimated there would be approximately a 20 per cent increase during the next five years in the number of employees who need competencies in animal, plant, soil science, and mechanics; and that firms which indicated the greatest need for workers were sales and service businesses dealing with agricultural supplies, agricultural machinery sales and service, and ornamental horticulture firms, and marketing and distribution businesses dealing with livestock and crop products. A summary of these studies is contained in a publication entitled "Summary of Research Findings of Off-Farm Agricultural Occupations."[40]

Horner and his staff[41] developed a statewide computerized model to determine occupational opportunities in Nebraska. They estimated 133,452 currently employed in agricultural occupations in their state. Seven hundred and thirty-three opportunities were identified as being available the next year in professional and managerial agricultural occupations; 9,800 opportunities in farming and

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[40]"Summary of Research Findings of Off-Farm Agricultural Occupations." Columbus: The Center for Vocational and Technical Education, The Ohio State University, 1965.

[41]James T. Horner, Roy D. Dillon, and C. A. Cromer. "A State-Wide Computerized Model to Determine Occupational Opportunities in Nebraska," Staff Study. Lincoln: Nebraska Research Coordinating Unit for Vocational Education, the University of Nebraska, 1968.

ranching; 2,800 in agricultural supplies and service; 500 in agricultural mechanics; 1,767 in agricultural products processing; 567 in ornamental horticulture; 100 in agricultural resources; 567 as agricultural laborers, 533 as agricultural loan officers; and 100 veterinary assistants needed in the next three years. Their model was developed to provide for a convenient annual updating.

> A summary of data available from thirty-six State Plans submitted for the 1969-70 fiscal year with projections to 1974 offers supply and demand figures for agricultural education. The thirty-six states reporting will need 724,000 agricultural workers in 1974, but according to estimates agricultural education in those states will be graduating only 120,000 students. In essence, the figures show that agricultural education will be training only about one-sixth of the manpower needed by the industry of agriculture in 1974. According to the State Plan data, four students will be completing off-farm agricultural education programs to every student that completes the agricultural production program.[42]

One of the most urgent research needs in agricultural education is a more complete identification of personnel and training needs in agriculture. The Center for Vocational and Technical Education at The Ohio State University has solicited the combined efforts of the U. S. Departments of Agriculture, Commerce, Labor, and the Office of Education in addition to agricultural education personnel to develop a long-range project for education in agriculture to accomplish this purpose. The research project proposed is entitled "Project Agriculture: A Program for Curriculum Development in Vocational Education." Some specific objectives of the project were:

> (1) to identify existing major occupational categories and job titles in agricultural businesses and industries, (2) to determine manpower requirements, (3) to develop a master plan for vocational education in agriculture, (4) to develop and conduct pilot training

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[42]"Guidelines for Agricultural Education--The Decade Ahead," Op. Cit., p. 18 (tentative draft).

programs, and (5) to provide a mechanism for continual updating of agricultural occupational data. A major purpose of Project Agriculture is to determine the nature and extent of educational needs uniquely associated with employment opportunities in the farm and off-farm agricultural industry and to develop appropriate curriculum programs for each of the seven areas of agricultural instruction in vocational education. The project would serve as a demonstration effort for all areas of vocational education.[43]

Guidelines

According to the findings of the Panel of Consultants on Vocational Education,[44] occupational education programs for the future must place a high priority on meeting such needs as:

1. An increasingly urgent need for orientation to, and meaningful experience in, the world of work to compensate for the decline of such opportunities in the home settings of an ever-more mechanized and urbanized society.

2. The need for students from economically handicapped homes to earn money to supplement family resources while in school.

3. The need to stay in school for a greater span of years in training programs which provide opportunities to acquire skills, to earn money, and to gain experience in and an appreciation of the world of work.

4. The need to learn at an early age the dignity of labor and the pride of workmanship; of special significance to the handicapped.

5. The need to obtain realistic work-experience in technologically up-to-date settings; a situation more apt to be found on-the-job than in contrived settings of the classroom or school shop with their vulnerability to technological lag.

6. The need to develop attainable goals and occupational aspirations of a constructive nature through direct and personal involvement in the world of work.

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[43] Abstracts of Research and Related Materials in Vocational and Technical Education, ERIC Clearinghouse. Columbus: The Center for Vocational and Technical Education, The Ohio State University, Summer 1969. p. 745.

[44] Education for a Changing World of Work, Report of the Panel of Consultants on Vocational Education, 1963.

Many groups have been giving attention to concepts of vocational education. A summer study of occupational, vocational and technical education at MIT resulted in the following six philosophical foundations as keystones for change.

1. Accessibility to quality vocational education programs;

2. Programs to meet the full spectrum of capabilities of youth and adults;

3. Coupling vocational and general education as integral parts of a common core within a total educational program;

4. Open-ended continuous vocational education and training opportunities;

5. Early orientation to vocational education through exploratory occupational experiences in a setting where the traditional division of education into separate educational subject disciplines is replaced by an educational "mix" starting in the elementary school; and

6. Instructional flexibility to prepare students for adaptation to constantly changing employment patterns.[45]

The House Report Committee on Labor and Public Welfare (1326), 1968, provides some guidelines for future programs.

> . . . The General Subcommittee on Education has concluded that the following five ideas recommended by the Advisory Council (on Vocational Education) deserve serious consideration:
>
> (1) any dichotomy between academic education and vocational education is outmoded;
>
> (2) developing attitudes, basic educational skills and habits are as important as skill training;
>
> (3) prevocational orientation is necessary to introduce pupils to the world of work and provide motivation;
>
> (4) meaningful career choices are a legitimate concern of vocational education;

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[45]Nathaniel H. Frank. "The Summer Study of Occupational, Vocational, and Technical Education." Cambridge, Mass.: Massachusetts Institute of Technology, 1965.

(5) vocational programs should be developmental, not terminal, providing maximum options for students to go on to college, pursue post-secondary vocational and technical training, or find employment.[46]

School administrators are an important group in the development of educational programs. They indicate:

> Education must be responsive to the needs of the nation and the community it serves. To be such, educators must become increasingly involved in communication and consultation with labor, business, and other interested groups.
>
> Schools must design programs without regard for the conventional conveniences of quarters, semesters, six-week terms, Carnegie units, and other formulas. Flexible programs can be developed so that students may leave to take a job at any time or stay for advanced school work independent of the school calendar. Schools must develop means to meet the needs of people who cannot be reached through existing methods.
>
> School administrators are urged to keep the following points in mind:
>
> 1. Education and the development of human resources cannot exist in an ivory tower. Quality programs focusing on the individual student, but with long-range benefits to all of us, require adequate resources, well-trained teachers, suitable buildings, and appropriate curricula and methods. These are possible only through partnerships between education and federal, state, and local governments; private employers and trade associations; labor unions, and the rest of the community.
>
> 2. We have reached a point where the allocation of national resources seems moving farther from the public and farther from those who will be affected by these decisions. The direction must be reversed.
>
> 3. Manpower policy must recognize that the attribute that keeps a person mobile in the labor market is his ability to absorb new knowledge and ideas, not the number of years he has worked on a job that is now obsolete and from which there are no transferrable skills.
>
> 4. We are at a point in history where decisions affecting national resources for education are being considered as never before. The school administrator cannot shift his responsibility

[46] House Report Committee on Labor and Public Welfare (1326), 1968.

> for human or individual development, regardless of what other label is placed on a national manpower program. It is up to him to acknowledge his responsibility for all of education, whatever its purposes and regardless of whether it is conducted in a school, a skills center, or in a special room set aside in a factory or a shop. Education must not be divorced from occupational preparation.
>
> 5. There is clearly a spectre of dualism in education--a situation not previously accepted in this country.[47]

In the first Annual Report of the National Advisory Council on Vocational Education, which was established by the Vocational Education Amendments of 1968 issued July 15, 1969, the following was proposed:

> The failure of our schools to educate to the level of adequate employability nearly 25 per cent of the young men and women who turn 18 each year is a waste of money, as well as of human resources. The Nation supports a galaxy of remedial programs, some of which have cost as much as $12,000 for every man or woman placed on a job. Those who remain unemployed may cost us $4000 or more per year in welfare support for themselves and their children, who will repeat the dreary, costly cycle.
>
> The costs, the blighted lives, the discontent, the violence, and the threat of revolution, are needless. Schools can prepare young people to realize their potential. Why is success not universal? Why is the failure rate so high?
>
> The reasons are attitude, program and money.
>
> ATTITUDE
>
> At the very heart of our problem is a national attitude that says vocational education is designed for somebody else's children. This attitude is shared by businessmen, labor leaders, administrators, teachers, parents, students. We are all guilty. We have promoted the idea that the only good education is an education capped by four years of college. This idea, transmitted by our values, our aspirations and our silent support, is snobbish, undemocratic, and a revelation of why schools fail so many students.
>
> We recommend that the Federal government immediately exercise its leadership and allocate more of its funds to cure our country of our national sin of intellectual snobbery.

[47] "Education and National Manpower," Hotline, American Association of School Administrators, July 1969.

> PROGRAM
>
> Within high schools the student should have multiple choices. A separate vocational school or a distinct vocational track should be exceptions, not rules, in a technical and changing society. Communication and computation skills become relevant in a context that relates them to an employment objective. All students must be allowed to move in to and out of vocational-technical programs and to select mixtures of vocational-technical and academic courses. Students should be released from school to acquire employment experience, and should then be taken back for further education. Students should be able to go to school the year around. It is inconceivable that we plan to continue to let our school plant lie idle three months of the year. Rural schools must give their students opportunities to train for urban jobs, since many of them are bound for the city.
>
> Those who do not acquire a job skill before leaving the 12th grade must have access to a full range of post-high school programs to train them for employment at their highest potential. Vocational and technical programs should be readily available to most adults through adult high schools and community colleges. The rapidity with which Americans will change jobs in their lifetimes must be matched by the variety and accessibility of training programs through which new skills and subject matter can be learned at any age in every locality.
>
> Changes in the elementary curriculum are also needed. Exploration of the world of work should begin early. Respect for work and pride of workmanship are essential in a trillion-dollar economy. Direct job-related instruction, starting in the upper elementary grades, should be made available for some pupils.
>
> We recommend that substantial Federal funds be allocated to support curriculum development, teacher training, and pilot programs in vocational education. No Federal investment will bring a higher return. We challenge State and local governments to throw off old habits and take a hard, fresh look at what they are doing in vocational education. We urge the public to watch carefully, and to demand and support the innovations that work.
>
> MONEY
>
> For society, as a whole, educating youth for employment costs less than educating them for the college they will never reach and providing remedial training thereafter. In the budget of a particular school district, however, to prepare a student for a job costs more than to prepare him for college. Classes usually must be smaller; equipment and facilities are more expensive; a good job placement service is more costly than a good college enrollment service. The added cost of vocational education is a reason--or an excuse--explaining why most school districts have shirked the duty to provide it adequately.

We do not condone the misallocation by local districts of their resources. But we recognize the real pressures from teachers for salaries that at least keep pace with inflation and from taxpayers whose property tax rates have mounted rapidly. We believe that the reform of American schools the Nation so desperately needs will not come about if the Federal government continues to invest nearly $4 in remedial manpower programs for each $1 it invests in preventive vocational programs. If the Federal government will substantially support the additional initial cost of educating youth for employment, we believe that the financial, personal, and social costs of unemployment can be dramatically reduced.[48]

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[48] Annual Report, National Advisory Council on Vocational Education, Vocational Education Amendments of 1968, Public Law 90-576, July 15, 1969.